

VINOGRADOVA, S. V.

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✓ High-molecular weight compounds. LXXIX. Products of polycondensation of dialdehydes and ~~ketones~~ with diamines and glycols. V. V. Korshak and S. V. Vinogradova (Inst. Hetero-org. Compds., Moscow). ~~Trans. Acad. Nauk S.S.S.R., Otdel. Khim. Nauk 1955, 925-9; cf. C.A. 45, 1513f; 50, 2247f.~~—Condensation of $(CH_3)_2N(H)_2$ at 180° with dicarbonyl compds. gave condensation products, apparently including C:N bonds (not specifically detd.). With $p-C_6H_4(CHO)_2$ the product formed was a reddish solid, m. $188-92^\circ$, insol. in the usual solvents; the product from Ac_2O was a dark infusible solid, sol. in $EtOH-CHCl_3$; that from CH_3CO_2H a red viscous mass, and that from $AcCO_2H$ a dark solid, sol. in $EtOH-CHCl_3$, m. $70-85^\circ$. All of them have relatively low mol. wts. $(CH_2OH)_2$ with $p-C_6H_4(CHO)_2$

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gave no polymer, yielding only $p-C_6H_4CH_2OCH_2CH_2OCH_2$, m. $70-80^\circ$. The dialdehyde with $(CH_2)_6(OH)_2$ gave a tridimensional polymeric polyacetal, an elastic rubbery solid; addn. of C_6H_5OH to the reaction mixt. still gave a tridimensional product. LXXX. A case of migrational copolymerization. *Ibid.* 930-3.—Heating 1:1 or 1:0.5 mixts. of $(CH_3)_2N(H)_2$ and $(CH_3O)_2CCMe:CH_2$, of $(CH_3)_2N(H)_2$ and $(CH_3O)_2CCH:CH_2$, and of $(CH_3)_2N(H)_2$ and $(CH_3CH_2O)_2CCMe:CH_2$ in ampuls under N in the presence of hydroquinone up to 80 hrs. at 50° , 110° , and 150° , resulted in formation of transparent plastic condensation products, which tended to become more difficultly sol. after longer reaction periods and higher temps. of condensation. Similar condensations were run with $(CH_3OH)_2$ or H_2N

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V. V. Korshak

High Molecular Weight Compounds

$(CH_3)_2CHOH$ in binary mixts. with $(CH_3)_2CCMe:CH_2$ or $(CH_3)_2CCN:CH_2$. The reaction products formed in these combinations of reactants are explained by migrational copolymerization, i.e. polymerization with transfer of a H atom in each link of reaction. In the reactions with the diamine, the product is the result of addn. of the NH link

across the terminal double bonds of the unsatd. ester; the 2nd H atom of the amino group enters the reaction after longer reaction time and at higher temp. than the 1st H atom. LXXXI. Mixed polyamides containing glutaric and pimelic acids. V. V. Korshak and T. M. Brunze. *Ibid.* 934-41. Binary systems were studied contg. compns. of mixed polyamides from salts of $(CH_2)_4(NH_2)_2$ with glutaric or pimelic acids, the 2nd components being similar salts of adipic, azelaic, or sebacic acids. The m.ps. of the resulting polyamides are shown graphically. These systems have a min. m.p. at 60 mole-% of the component contg. an odd no. of C atoms in the mol. The nos. of possible cross-linking H bonds in such products can vary considerably, depending on the phys. disposition of the proximate macromols. of their mech. strength by improving the probability of geometric alignment which permits interchain H bonding. LXXXII. 2,4,5-Trisopropyl- α -methylstyrene. V. V. Korshak and N. G. Matveeva. *Ibid.* 942-4. To 30 g. 1,2,4- $C_6H_3CH_3$, 15 g. $AlCl_3$, and 100 ml. $(CHCl_3)$ was gradually added 25 g. $AlCl_3$ with cooling, and the mixt. kept overnight, heated 1 hr. on a steam bath, and treated with dil. HCl , yielding 82.1% 2,4,5- $(Me_2CH)_3C_6H_2Me$, bp 150-62°, m. 100-7°. This (20 g.). 40 g. MeI , 18 g. powd. Na , and

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V. Y. Korshak 8

High Molecular Weight Compounds

200 ml. Et₂O were treated with 1 ml. EtOH to start the reaction, after termination of which the mixt. was heated on a steam bath 1-1.5 hrs., decanted from the Na, treated with Et₂O, and the ether soln. of the desired alcoholate treated with H₂O and extd. with Et₂O; distn. gave 2,4,5-(Me-CH)₂C₆H₂CH₂Me: CH₂, b_p 110-111°, d₄ 0.823, n_D 1.4870. The substance could not be induced to polymerize either by radical (Bz₂O₂) or ionic initiators (AlCl₃). Thus a Me group on the vinyl group hinders polymerization more than do two o-Me groups on the benzene ring. Cf. C.A. 48, 5783d.

G. M. Kosolapoff

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KOESHAK, V.V.; VINOGRADOVA, S.V.

High molecular weight compounds. Part 80. A case of migrational copolymerisation. Izv. AN SSSR.Otd.khim.nauk no.5:930-933 S-O '55. (MLBA 9:1)

1.Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.
(Polymers and polymerisation)

KORSHAK, V.V.; VINOGRADOVA, S.V.

High molecular weight compounds. Part 93. Properties of polyesters of tetramethyleneglycol and butanediol-1,3. Zhur.ob.khim. 26 no.2: 539-544 F '56. (MLRA 9:8)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Butanediol) (Esters)

" KORSHAK, V.V.; VINOGRADOVA, S.V.

High molecular weight compounds. Part 94. Polyesters of trimethylene and pentamethylene glycols. Zhur.ob.khim. 26 no.2:544-548
P '56. (MLRA 9:8)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.
(Propanediol) (Pentenediol) (Esters)

KORSHAK, V.V.; VINOGRADOVA, S.V.

High molecular weight compounds. Part 95. Polyesters of thiodi-valeric acid. Zhur.ob.khim. 26 no.3:732-735 Mr '56. (MLRA 9:8)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Valeric acid)

VINOGRADOVA, D. V., SLONIMSKII, G. D., and KORDEN, V. V.

"Mechanical properties of aliphatic amorphous polyethers," a paper
presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28
Jan-2 Feb 57, Moscow, Research Inst. of Organic Chemistry.

B-3,084,395

VINOGRADOVA, S. V., KORSHAK, V. V., and BELYAKOV, V. M.

"Synthesis and properties of polyesters of various dicarboxylic acids and glycols," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Organic Chemistry Research Inst.

B-3,004,395

VINOGRADOVA, S.V.
USSR / Chemistry of High Molecular Compounds.

L.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6800.

Author : Korshak, V.V., Vinogradova, S.V., Belyakov, V.M.

Inst : Not given.

Title : Heterogeneous Polyesters. Communication I. Polyesters of Isomeric Phthalic Acids.

Orig Pub : Izv. AN SSSR, Otd. khim. n., 1957, No.6, 730-736.

Abstract : Polyesters (PE) of phthalic (I), isophthalic (II), terephthalic (III) acids and glycols: $\text{HO}(\text{CH}_2)_n\text{OH}$, where $n = 2$ (IV), 3 (V), 4 (VI), 5 (VII), 6 (VIII), 10 (IX), 20 (X), propylene glycol (XI), butanediol-1,3 (XII), di-(XIII) and triethylene glycols (XIV) were synthesized and investigated. The PE were obtained by polycondensation IV-XIV with dimethyl esters of I-III in the presence of PbO . Enumerated were:

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L.

USSR / Chemistry of High Molecular Compounds.
Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6800.

Abstract

Starting materials for synthesis of PE., $\eta_{sp.}$ of 0.5% solution in cresol, melting point of PE in OC , transition temperature of PE into a viscous liquid in OC , temperature of flow in OC , and solubility of PE in C_6H_6 and alcohol in g/l: III, IV, 0.37, 258, -, -, 0.0; III, V, 0.20, 217-218, -, -, -, IX, 2.2, 0.8; III, VIII, 0.45, 148-154, -, -, 0.9, 0; III, 113, -, 1.9, 0.3; III, XI, 0.13, 106-111, 84, 97, > 50, 1.6; III, XII, 0.11, 82-87, 28.5, 37, > 50, 3.6; III, XIV, 0.48, 60-65, 4, 17, 11.3, 65-70, 34, 51, 0.24, 103-108, 73, 89, 2.25, 0.2, 11, V, 0.20, 1.1; II, IV, 0.25, 76-82, 28, 40, > 125, 1.2; II, VIII, 0.4; II, VII, 0.31, 75-80, 32, 80, -125, 1.4; II, IX, 0.20, 34-36, 25, 29, > 125, 4.9; II, X, 0.08, 47-49, 45, 48, > 50, 3.0; II, XI, 0.11, 80-87, 54, 67, > 50, 4.9; II, XII, 0.12, 50-55, XI, 0.11, 80-87, 54, 67, > 50, 4.9; II, XIV, -, -, -6,

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VINOGRADOVA, S.V.

USSR / Chemistry of High Molecular Compounds.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6801.

Author : Korshak, V.V., Vinogradova, S.V., Belyakov, V.M.

Inst : Not given.

Title : Heterogeneous Polyesters. Communication 2. Polyesters of Isomeric Diphenylcarboxylic Acids.

Orig Pub : Izv. AN SSSR, Otd. khim. 2., 1957. No 6, 737-745

L.

USSR / Chemistry of High Molecular Compounds.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6801.

L.

Abstract : and tri-(XIV) ethylene glycols. Enumerated are: starting materials for the synthesis of PE, melting point of PE in $^{\circ}\text{C}$, transition temperature of PE into a viscous liquid in $^{\circ}\text{C}$, temperature of PE flow in $^{\circ}\text{C}$., solubility of PE in alcohol and C_6H_6 in g/l, η_{sp} . 0.5% solution of PE in cresol: III, IV, 330-333, -, -, 0, 0, -; III, V, 246-249, -, -, -, -, 0, 13; III, VI, 255-260, -, -, -, -, -, -, -, -, -, -, 0.9, 3.3, 0.15; III, VIII, 195-200, -, -, -, -, -, 0.8; III, IX, 126-132, -, -, -, -, 0.06; III, X, 112-115, -, -, -, -, 0.07; III, XI, 130-140, -, -, 3.3, 5.3, 0.05; III, XII, 125-135, -, -, -, -, 0.05; III, XIII, 117-119, -, -, 2, 3, 5.5, 0.05; III, XIV, 86-93, -, -, -, -, 0.05; II, IV, 119-122, -, 100.0, 2.0, 0.109; II, V, 76-78, 49, 67, -, -, 0.04; II, VI, 62-66, 30, 79, -, -, 0.06; II, VII, 57-60, 30, 42, -, 16, 0.086; II, VIII, 52-56, 25, 39, -, -, 0.094; II, IX, 86-90, 86, 96, -, -, 0.079; II, X, 89-91, 87, 96, -, -, 0.079; II, XI, 93-97, 53, 95, 1.9, 49.7, 0.094; II,

Card : 2/6

USSR / Chemistry of High Molecular Compounds.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6801.

L:

Abstract : gularity of melting point variation in relation to the glyool structure is analogous to those that take place in a series of corresponding aliphatic dicarboxylic acid PE. If the PE is obtained from ADK in which the carboxylic groups occupy the ortho or meta position rather than the para position, then the presence of an aromatic nucleus in the polymeric chain is not always sufficient to obtain a higher melting PE as compared to the corresponding PE of the aliphatic dicarboxylic acid. It is not always that the melting point of PE increases when the number of aromatic nuclei in the acid increases from one to two. This can be attributed to the disruption of packing density in the polymeric chain on account of the occurring dissymmetry in the macromolecule. The greater is the dissymmetry in the polymeric chain, the lower is the melting point of the polymer. The effect of dissymmetry in the polymeric chain of PE ADK having carboxyl groups in ortho and meta position is so great that it suppresses the effect produced by structure modification in

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USSR / Chemistry of High Molecular Compounds.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6801.

L.

Abstract : glycol which is manifested by the absence of the regularity factor, in an insignificant change of PE melting points of glycol containing in the molecule a side group CH_3 , ether linkage, as compared to PE of polymethylene glycols. The disruption of packing density in polymeric chains of PE I and II manifests itself in the change of PE ability for crystallization. The majority of PE I and II are transparent amorphous materials. The PE I - III are obtained by polycondensation of dimethyl esters I-III with IV-XIV in the presence of LiOH as a catalyst. I is synthesized from anthranilic acid by the Akkinson and Louler method (Syntheses of Organic Preparations, v.1, II, 1949, 209), yield 72%, m.p. 225-228°. Esterifying I with a 15 times excess of CH_3OH in the presence of HCl gas the dimethyl ester I is obtained, yield ~80%, m.p. 73-74°. The synthesis of II is carried out according to the scheme: m-toluidine \rightarrow m-bromotoluol \rightarrow m-magnesiumbromotoluol \rightarrow 3,3-diphenyl-II, (III is synthesized

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USSR / Chemistry of High Molecular Compounds.

Abs Jour : Ref. Zhur. - Khimiya, No.2, 1958, 6801.

L.

Abstract : in like manner starting with p-toluidine). The m-(XV) and n-bromotoluols (XVI) are obtained by Bigelov method (Syntheses of Organic Preparations, v. 1, IL, 1949, 137) yield of XV is 53-56%, boiling point 49-51°/~ 2-3 mm; yield of XVI 77-82%, m.p. 25-26. The yield of m,m'-ditolyl (XVII) is 49.5%, b.p. is 118-120°/~ 2-3 mm; the yield of n,n'-ditolyl (XVIII) is ~ 50%, b.p. is 145°/7 mm, m.p. is 121°. The II and III are obtained from XVII and XVIII, respectively, by oxidation with $K_2Cr_2O_7$ in a neutral medium under pressure in an autoclave (1 hour at 275°). The yield of II is 62-67%, m.p. is 345°; the yield of III is 80%. The dimethyl ester of II is synthesized from II and CH_3OH in the presence of HCl gas, the yield is 73-80%, b.t. 205-210°/ 3-5 mm., m.p. is 102-103°. Dimethyl ether III is obtained through acid chloride III with a yield of ~ 65%, m.p. 213-214°.

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VINOGRADOVA, S.V.

USSR / Chemistry of High Molecular Compounds.

L.

Abs Jour : Zhur. - Khimiya No.2, 1958, No. 6802.

Author : Korshak, V.V., Vinogradova, S.V.

Inst : Not given.

Title : Heterogeneous Polyesters. Communication 3. Polyesters of β -methyladipic and β (n-nitrophenyl) glutaric acid.

Orig Pub : Izv. AN SSSR, Otd. khim. n., 1957, No.6, 746-749.

Abstract : With the aim to clarify the effect produced by a side chain in a dicarboxylic acid on the properties of polyesters (PE) the PE were prepared and investigated of β methyladipic (I) and β (n-nitrophenyl)-glutaric acids (II) and glycols: HO(CH₂)_nOH where n = 2 (III), 3 (IV), 4 (V), 5 (VI), 6 (VII), 10 (VIII), 20 (IX), propylene glycol (X), butane-1,3 (XI), di-(XII) and tri-(XIII) ethylene glycols.

Card : 1/4

USSR / Chemistry of High Molecular Compounds.

L.

Abs Jour : Zhur. - Khimiya No.2, 1958, No. 6802.

Abstract : There were enumerated: the starting acid and glycol, melting point of PE in °C, transition temperature of PE into a viscous liquid in °C, temperature of PE flow in °C, solubility of PE in alcohol and in C₆H₆ in g/l, molecular weight of PE determined from viscosity: I, III, -31 ÷ -27, -46, -28, 11.7, -, 1200; I, IV, -35 ÷ -31, below -56, -, 17, -, 1290; I, V, -, -43 ÷ -38, below -60, -47, 24.7, 0.5 g. in 5 ml., 1030; I, V, -43 ÷ -38, -, -, 9.9, -, 4380; I, VI, -46 ÷ -42, below -60, -47, 33, 0.5 g. in 5 ml., 1200; I, VI, -45 ÷ -40, below -60, -41, 13.8, -, 5000; I, VI, -45 ÷ -41, below -60, -, 16.2, -, 3500; I, VII, -47 ÷ -42, below -50, -43, 6.9, 55.2, 3700; I, VIII, -3 ÷ -2, 2, 8, 4.3, 0.5 g. in 5 ml., 5100; I, IX, 57-60, 64, 65, 0.7, 48.1, 7100; I, X, -25 ÷ -21, below -40, -23, 28.7, 0.5 g. in 5 ml., 1940; I, XI, -34 ÷ -30, -51, -37, 51.5, 0.5 g. in 5 ml., 1840; I, XII, -29 ÷ -24, below -50, -32, 16.7, 0.5 g. in 5 ml., 1790; I, XIII, -42 ÷ -38, below -58, -36, 18.8, 0.5 g. in 5 ml., 1730;

Card : 2/4

USSR / Chemistry of High Molecular Compounds.

L.

Abs Jour : Zhur. - Khimiya No.2, 1958, No. 6802.

Abstract : II, III, 73-76, 16, -, -, -, 2300; II, VI, -, 9, 37, -, -, 3100; II, VII, -, 19, 38, -, -, 5200; II, IX, 42-46, 38, 39, -, -, 4900. Comparing PE I and II with corresponding PE of adipic (XIV) and glutaric (XV) acids, the effect of side substituents in I and II on the properties of PE was discussed. The introduction of the side CH_3 group into XIV eliminates the uniformity factor of glycol. An alteration in glycol structure (the presence of a side group, ether linkage) does not affect substantially its properties, which is contrary to PE XIV where the CH_3 group in I, apparently, shows a major effect on the properties of PE. Polyesters I and the odd-membered glycols are more readily soluble in alcohol than PE I and even-membered glycols. The introduction of a side $\text{p-NO}_2\text{C}_6\text{H}_4$ - group into XV elevated the softening point of PE II as compared to that of PE XV, which is, evidently, connected with the increased stiffness of the polymeric chain PE II (thanks to the presence in it of strongly polar $\text{p-NO}_2\text{C}_6\text{H}_4$ groups).

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USSR / Chemistry of High Molecular Compounds.

L.

Abs Jour : Zhur. - Khimiya No.2, 1958, No. 6802.

Abstract : The lowering melting point of PE II with VI, VII, IX as compared to that of PE III is dependent upon decreased action of $p\text{-NO}_2\text{C}_6\text{H}_4$ groups with the increase of number of $-\text{CH}_2$ groups in the glycol. The amorphism of PE II decreased concurrently with the increase of $-(\text{CH}_2)$ groups in the glycol.

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USCOMM-DC-54636

TIGLATO-GASTE KOYENARA IV. Folgentara of sul. var.
divaric. sul. Y. Y. Koyenara and S. Y. Y. Koyenara

Distr: LEBJ/4E3d

CAI

Vinogradova, S.V.

KORSHAK, V.V.; VINOGRADOVA, S.V.

Heterocyclic polyesters. Report No. 5: Polyesters of diglycolic acid. Izv. AN SSSR. Otd. khim. nauk. no. 7: 866-870 JI 37.

(MIRA 10:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Diglycolic acid)

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001860010004-1

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NO. 87, NO. 88, decamethyl-

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VINOGRADOVA, S.V.

KORSHAK, V.V.; VINOGRADOVA, S.V.; BELYAKOV, V.M.

Heterogenous chain polyesters. Report No.7: Polyesters of p-phenyl-enediacetic, cis- and trans-hexahydroterephthalic acids. Izv. AN SSSR. Otd. khim. nauk no.8:1000-1001 Ag '57. (MIRA 11:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esters) (Terephthalic acid) (Acetic acid)

"APPROVED FOR RELEASE: 09/01/2001

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VINOGRADOVA, S.V.

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PHASE I BOOK EXPLOITATION

SOV/1496

Korshak, Vasilii Vladimirovich, and Svetlana Vasil'yevna Vinogradova

Geterotsepnnyye poliefiry (Heterochain Polyesters) Moscow, Izd-vo AN SSSR, 1958. 403 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut elementoorganicheskikh soedineniy.

Resp. Ed.: S.R. Rafikov, Doctor of Chemical Sciences; Ed. of Publishing House: A.L. Bankvitser; Tech. Eds.: I.F. Kuz'min, and P.S. Kashina.

PURPOSE: This book is intended for scientists, students and teachers of vuzes, and engineering technologists engaged in the production of synthetic fibers, color varnishes, and plastics.

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Heterochain Polyesters

SOV/1496

COVERAGE: The present monograph attempts a complete generalization of all literary data on the chemistry and physics of polyesters up to 1956. Problems dealing with the industrial preparation and use of polyesters are only treated briefly, the primary concern being the underlying theory of preparation methods and the properties of synthetic heterochain polyesters. There are references given after each chapter.

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Classification of polyesters	5
History of the problem	6
Chemical classification of high-molecular compounds	9
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Card 2/13

62-58-5-20/27

AUTHORS: Korshak, V. V., Vinogradova, S. V.

TITLE: On Heterogeneous Chain Polyesters (O geterotsepnnykh poliefirakh)
Communication 12: Polyester of the Terephthalic - and Isophthalic Acid and of Diatomic Phenol (Soobshcheniye 12. Poliefirny tereftalevoy i izoftalevoy kislot i dvukhatomnykh fenolov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 637 - 640 (USSR)

ABSTRACT: Polyesters of the terephthalic- and isophthalic acid, as well as the diatomic phenols of various structure were synthesized and investigated with respect to the physical properties for the purpose of investigation of the influence of the structure of the initial substances. All polyesters (except the polyesters of O,O'-dioxydiphenyl) were obtained by means of polycondensation in divinyl-solution in nitrogen-flow according to a slow increase in temperature (from 120 to 230°C). Polyesters of p,p'-diphenylpropane were also synthesized with terephthalic- and isophthalic acid. The softening-temperatures fluctuated between 350 and 275°C. As results from the table, these temperatures depend substantially on the structure of the polymeric chain. The vitrification -temperature of the first polyester amounted

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On Heterogeneous Chain Polyesters, Communication 12: 62-58-5-20/27
Polyester of the Terephthalic- and Isophthalic Acid and of Diatomic Phenol

to $\sim 200^{\circ}$, that of the second to $\sim 120^{\circ}\text{C}$. The polyesters of the p,p'-dioxihexaphenylxylol had considerably lower softening-temperatures than the polyesters of the p,p'-dioxylphenylpropane. Especially high softening-temperatures are characteristic for the polyesters of dioxynaphthalenes. It was not possible to melt the polyesters of the 1,6 and 1,5-dioxynaphthalenes without a decomposition taking place. There is 1 table.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute for Elemental-organic Compounds AS USSR)

SUBMITTED: December 30, 1957

1. Cyclic compounds--Synthesis
2. Cyclic compounds--Physical properties
3. Molecular structure--Determination

Card 2/2

5(3)

AUTHORS:

~~Vinogradova~~, S. V., Korshak, V. V.,
Corresponding Member AS USSR

SOV/20-123-5-22/50

TITLE:

The Kinetics of the Polycondensation of Dicarboxylic
Acid Chlorides With Biatomic Phenols (Kinetika
polikondensatsii khlorangidridov dikarbonovykh kislot s
dvukhatomnymi fenolami)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5
pp 849-852 (USSR)

ABSTRACT:

The reaction of double decomposition, an example of which
is the interaction of the acid chlorides mentioned in the
title with diols, represents the hitherto least investigated
instance of polyester formation (Refs 1-6). A previous paper
(Ref 7) by the authors contained data on polyesters of
aromatic dicarboxylic acids and of biatomic phenols. In the
present paper, an investigation was to be made of the
formation of this polyester by the following equation:
 $\text{HOArOH} + \text{ClOCaRCOCl} \rightarrow \text{HCl} + \dots - \text{OArOOCaRCO} - \dots$
The kinetics of the polycondensation was investigated
in the interaction of the acid chlorides of isophthalic and
terephthalic acids with p,p'-dioxyphenyl-propane between

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The Kinetics of the Polycondensation of
Dicarboxylic Acid Chlorides With Biatomic Phenols

SOV/20-123-5-22/50

150 and 210°, of the acid chloride of terephthalic acid with o,o'-dioxy-diphenyl, resorcin and hydroquinone at 170°, and, finally, of the acid chloride of sebacic acid with p,p'-dioxy-diphenyl-propane at 150°. The reaction was carried out in a dinitrile solution in a current of dry purified nitrogen. The reaction proceeded according to a bimolecular mechanism (according to van't Hoff (Vant-Goff) in Ref 8). Table 1 presents the velocity constants and the transformation of these reactions. The velocity constants of the reactions of p,p'-dioxy-diphenyl-propane with the acid chlorides of tere- and isophthalic acids were modified in accordance with the Arrhenius equation (Fig 1). From these equations, the energies of activation of the individual reactions, as well as the temperature coefficients of the reaction were calculated (Table 2). At 170°, the individual substances can be classified as follows with regard to the velocity of the reaction with the acid chloride of terephthalic acid: hydroquinone > resorcin > o,o'-dioxy-diphenyl > p,p'-dioxy-diphenyl-propane. The differences among the latter 3 substances are not high. From table 1 it can be seen that the transformation in the reaction increases with rising temperatures

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The Kinetics of the Polycondensation of
Dicarboxylic Acid Chlorides With Biatomic Phenols

SOV/20-123-5-22/50

(duration: 7 hours). However, the transformation in the reaction of p,p'-dioxy-diphenyl-propane with the acid chloride of isophthalic acid is only 0.72, even at 210°. At 220° and at a higher initial concentration, a transformation of 0.975 could be achieved after a reaction duration of 7 hours. From figure 2 it can be seen that the viscosity of the polyester, i. e. its molecular weight, increases continuously with a continued reaction duration. The development of the polymer chain takes place after 3-4 hours, due mainly to the interreaction of the polymeric molecules. There are 2 figures, 2 tables, and 8 references, 3 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk
SSSR (Institute of Elemento-Organic Compounds of the
Academy of Sciences, USSR)

SUBMITTED: July 3, 1958

Card 3/3

VINOGRADOVA, Svetlana Vasil'yevna for Doc Chem Sci on the basis of dissertation
Elementary Organic
defended 28 May 59 in Council of Inst of ~~Elementary Organic~~ Compounds, Acad Sci USSR,
entitled "Study in the field of heterocyclic ~~Elementary Organic~~ polyesters." (BMVISO USSR, 1-61, 25)

-210-

SCV/62-59-1-25/36

5(3)

AUTHORS:

Korshak, V. V., Vinogradova, S. V.

TITLE:

On Polyesters With Heterogeneous Chains (O geterotsepnnykh poliefirakh) Communication XII. Polyesters of the Azobenzene-3,3'- and Azobenzene-4,4'-Dicarboxylic Acid (Soobshcheniye 12. Poliefiry azobenzol-3,3'- i azobenzol-4,4'-dikarbonovoy kisloty)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 1, pp 148 - 153 (USSR)

ABSTRACT:

In the present paper the authors synthesized polyesters of the azobenzene-3,3'- and azobenzene-4,4'-dicarboxylic acid. They investigated the influence exercised by the aromatic nucleus and the azo group, which are simultaneously contained in the molecule of the initial acid, on the properties of the polyesters. The properties of the polyesters obtained and aliphatic glycols are given in the table. A comparison between the polyesters shows that they differ considerably. A modification of the mutual distribution of carboxyl groups in the initial azo acid varies the properties of the polyesters obtained from them. Polyesters of the azobenzene-4,4'-dicarboxylic acid possess a higher degree of crystalli-

Card 1/4

On Polyesters With Heterogeneous Chains. Communication XII. SOV/62-59-1-20/39
Polyesters of the Azobenzene-3,3'- and Azobenzene-4,4'-Dicarboxylic Acid

nity. Their temperature of softening is much higher than that of corresponding polyesters of the azobenzene-3,3'-dicarboxylic acid; they are less soluble. The disturbance of the symmetry of the molecule in the initial dicarboxylic acid caused by the modification of the mutual distribution of carboxyl groups leads to a disturbance of the arrangement of chains in the first members of the polyesters of the homologous series of glycols and to the destruction of crystallinity. In order to explain the influence exerted by the azo groups contained in the aromatic dicarboxylic acid it is useful to compare corresponding polyesters of the diphenyl-dicarboxylic acid with those of the azobenzene dicarboxylic acid. A comparison between the properties of polyesters of the azobenzene dicarboxylic acids with those of corresponding polyesters of the diphenyl-ethane and diphenyl-ethylene dicarboxylic acid would also be most informative. These comparisons could not be made completely since there were only data available on the polyester of the p,p'-diphenyl-ethane dicarboxylic acid. It was found that the temperatures of softening of polyesters of the azo-

Card 2/4

On Polyesters With Heterogeneous Chains. Communication XII. SOV/62-59-1-25/32
Polyesters of the Azobenzene-3,3'- and Azobenzene-4,4'-Dicarboxylic Acid

benzene-4,4'-dicarboxylic acids and glycols with short chains show greater differences, which disappear, however, in glycols with long chains. It is apparently due to the fact that on the prolongation of the aliphatic chain the influence of the azo group decreases. Beginning with a certain number of methylene groups in the initial glycol the influence of the azo group stops existing and the influence of the glycol becomes decisive. Unlike polyesters of the azobenzene-4,4'-dicarboxylic acids polyesters of the azobenzene-3,3'-dicarboxylic acids almost do not differ in their temperatures of softening. Presumably in this case the properties of polyesters are mainly influenced by the asymmetric distribution of the carboxyl groups in the initial acid which destroy the close packing of the polymer chain. The authors thank Yu. T. Struchkov and A. I. Yefimova for the radiographic analysis of polyesters which was performed at the Laboratory for X-Ray Structure Analysis (Head A. I. Kitaygorodskiy). There are 1 table and 6 references, 3 of which are Soviet.

Card 3/4

On Polyesters With Heterogeneous Chains. Communication XII. SOV/62-59-1-25/38
Polyesters of the Azobenzene-3,3'- and Azobenzene-4,4'-Dicarboxylic Acid

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental Organic Compounds of the Academy of
Sciences, USSR)

SUBMITTED: April 26, 1957

Card 4/4

5(3)

SOV/62-59-1-26/33

AUTHORS:

Korshak, V. V., Vinogradova, S. V.

TITLE:

On Polyesters With Heterogeneous Chains (O geterotsepykh poliefirakh) Communication XIII. Polyesters of p-Xylylene Glycol (Soobshcheniye 13. Poliefiry p-ksililenglikolya)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 1, pp 154 - 161 (USSR)

ABSTRACT:

In the present paper the authors synthesized polyesters of the p-xylylene glycol with dicarboxylic acids of the aliphatic and aromatic series and investigated the influence of the aromatic nucleus contained in the glycol molecule on the properties of polyesters. Table 1 presents data on polyesters of the p-xylylene glycol and dicarboxylic acids. All polyesters, except the polyester of malonic acid, are colorless or cream-colored solid substances. The polyester attains the highest melting temperature with oxalic acid. In the series of polyesters of the p-xylylene glycol and aliphatic dicarboxylic acids - beginning with oxalic acid up to sebacic acid - a similar regularity is observed, as in the case of polyesters of the polymethylene glycols with even-

Card 1/4

On Polyesters With Heterogeneous Chains. Communication XIII. SOV/62-59-1-26/38
Polyesters of p-Xylylene Glycol

numbered members on modifying the temperatures of softening. Since there were only small samples available of several substances it was not possible to plot all thermomechanical curves by means of the consistometer. It may be stated, however, according to the data obtained that the temperature change during the transition to the viscoelastic phase which is due to the number of carbon atoms contained in the dicarboxylic acid molecule, shows the same character as the change of their melting temperatures. In order to explain the influence exercised by the aromatic nucleus contained in the polymer chain in glycol residues upon the properties of polyesters it would be useful to compare polyesters of the p-xylylene glycol with the corresponding polyesters of the glycol of the aromatic series - the hexamethylene glycol (Table 2). Table 3 gives data on polyesters of the p-xylylene glycol with aromatic and hydroaromatic dicarboxylic acids. It is a typical feature of polyesters of the p-xylylene glycol with different aromatic acids that all acids with a symmetric structure (with carboxyl groups in the para-

Card 2/4

On Polyesters With Heterogeneous Chains. Communication XIII. SOV/62-59-1-26/78
Polyesters of p-Xylylene Glycol

position) yield opaque polymers. In the case of less symmetric initial dicarboxylic acids polymers are obtained the crystallizability of which has disappeared or is complicated. When substituting a hydroaromatic system (hexahydroterephthalic acid) for the methylene groups in adipic acid trans-parent polymers are obtained the softening temperature of which depends on whether the initial acid is a cis- or trans-isomer. The trans-acid with a more symmetric structure yields polyesters with higher temperature of softening than the less symmetric cis-acid. The authors thank the co-workers of the Laboratory for X-Ray Structure Analysis (Head A. I. Kitaygorodskiy), Yu. T. Struchkov and A. I. Yefimova for the radiographic analysis of polymers, S. L. Sosin for the supply of dimethyl esters of the 2,5-dimethyl terephthalic, p,p'-diphenyl-ethane dicarboxylic and 3,4-diphenyl dicarboxylic acid as well as Ye. S. Krongauz for the hexadecane dicarboxylic acid. There are 3 tables and 6 references, 4 of which are Soviet.

Card 3/4

On Polyesters With Heterogeneous Chains. Communication XIII. SOV/62-59-1-26/38
Polyesters of p-Xylylene Glycol

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute of Elemental Organic Compounds of the Academy
of Sciences, USSR)

SUBMITTED: April 26, 1957

Card 4/4

L 24275-65 SPF(c)/EIR/DAF(J)/SAT(M)/T Pc-4, Fr-4/Ps-4 RPL RM/WW
ACCESSION NR: AP4010043 S/0062/64/000/001/0132/0141 27

AUTHORS: Korshak, V. V.; Vinogradova, S. V.; Papava, G. Sn. 3 7

TITLE: Heterochain polyesters. 53th Com. Mixed block polyacrylates
based on polyethylene oxide, diene and chloranhydride of
terephthalic acid 7

SOURCE: AN SSSR. Izvestiya. Ser. khim., no. 1, 1964, 132-141

TOPIC TAGS: polyester, heterogeneous polyester, mixed block polyacrylate, terephthalic acid, terephthalic acid derivative, infrared absorption spectrum, ditoyl methane, polycondensation

ABSTRACT: The polycondensation of polyethylene oxide, diene and the chloranhydride of terephthalic acid is investigated. Polyethylene oxide has a greater reactivity with respect to the chloranhydride of terephthalic acid than diene. By varying the polycondensation conditions, mixed block polyacrylates of different composition are obtained. The synthesis of mixed block polyacrylates of different composition is described.

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L 27273-65
ACCESSION NR: AP4010043

ferent molecular weight, diene and the chloranhydride of terephthalic acid was carried out and their properties were investigated. The characteristics of polyethylene oxide are tabulated. fig. art. has: 3 formulas, 7 tables, 3 figures.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR (Institute of Organometallic Compounds, Academy of Sciences,

SUBMITTED: 20Aug62

ENCL: 00

SUB CODE: 00 00

NO REF SOV: 000

OTHER: 004

Card 2/2

TOPIC TAGS: polyarylate, polymer film, heat resistant polymer, diphenol, polyarylic ester.

ABSTRACT. The purpose of this work was the preparation and study of polyarylates

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RECESSION NO: AF2000109

2

APPROVED FOR RELEASE: 09/01/2001

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ENCLOSURE 03

APPROVED FOR RELEASE: 09/01/2001

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APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001860010004-1"

5(3)

AUTHORS:

Korshak, V. V., Vinogradova, S. V.

SOV/62-59-2-25/40

TITLE:

On Heterogenous Chain Polyesters (O geterotsepykh poliefirakh).
Communication 14. Polyesters of m-Xylylene Glycol
(Soobshcheniye 14. Poliefiry m-ksililenglikolya)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1959, Nr 2, pp 338-343 (USSR)

ABSTRACT:

In the present paper polyesters of m-xylylene glycol were synthesized and investigated. In table 1 the data on polyesters of m-xylylene glycol with fatty dicarboxylic acids of different structure are given. It may be seen from it that the number of methylene groups contained in the polymethylene dicarboxylic acid influences the properties of polyesters of the m-xylylene glycol. Polyesters of m-xylylene glycol which were synthesized from dicarboxylic acids with an odd number of chain links are viscous liquids the softening temperature of which decreases with increasing methylene groups in the initial acid. Polyesters of dicarboxylic acids with an even number of carbon atoms in the molecule are opaque, solid compounds the softening temperatures of which also decrease with increasing methylene

Card 1/4

SOV/62-59-2-25/40
On Heterogenous Chain Polyesters. Communication 14. Polyesters of m-Xylylene Glycol

groups. The substitution of a simple ether bond for a methylene group in the glutaric acid molecule increases the softening temperature of the polymer. A similar effect is exercised by the introduction of the sulfo group into the chain of the polymethylene dicarboxylic acid. A comparison of the polyesters of m-xylylene glycol with fatty dicarboxylic acids to the corresponding polyesters of pentamethylene glycol (Ref 5) shows that the substitution of an aromatic nucleus for 3 methylene groups in the pentamethylene glycol molecule does not always involve an increase of the softening temperature. The introduction of the aromatic nucleus into the chain of an aliphatic glycol increases the rigidity of the polymer chain. By the use of aromatic dicarboxylic acids polyesters of m-xylylene glycol are formed which considerably differ from the polyesters of fatty dicarboxylic acids. The mutual distribution of carboxyl groups in the aromatic dicarboxylic acid exerts an effect on the temperatures of transition into the viscous-liquid state of the polyesters obtained (Table 2). A comparison of polyesters of m-xylylene glycol with aromatic dicarboxylic acids to the correspond-

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SOV/62-59-2-25/40

On Heterogenous Chain Polyesters. Communication 14. Polyesters of m-Xylylene Glycol

ing polyesters of p-xylylene glycol shows that the change in the distribution of methylol groups in xylylene glycol alters the properties of the polyesters obtained. Polyesters of the less symmetrical m-xylylene glycol have lower softening temperatures than the corresponding polyesters of p-xylylene glycol. The comparison of polyesters of the isophthalic, m,m'-diphenyl dicarboxylic and diphenic acid to m-xylylene glycol and pentamethylene glycol (Refs 1,2) shows that the substitution of an aromatic nucleus for part of the methylene chain in pentamethylene glycol leads to softening and vitrification temperatures which are the higher the less symmetrical the dicarboxylic acid is. The comparison of the softening temperatures of several polyester pairs has shown that the substitution of a corresponding aromatic acid for the fatty dicarboxylic acid as well as the substitution of aromatic nuclei for part of the methylene groups in the polymethylene dicarboxylic acid and glycol mostly causes an increase of the softening temperature. Simultaneous substitution of aromatic nuclei for the methylene chain in acid and glycol involves in the case of polyesters of m-xylylene glycol

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SOV/62-59-2-25/40
On Heterogenous Chain Polyesters. Communication 14. Polyesters of m-Xylylene Glycol

not only an increase of the softening temperature of the polymers but also the destruction of their crystallizability or at least an inhibition of crystallization. There are 2 tables and 10 references, 7 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental-Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: April 26, 1957

Card 4/4

VINOGRADOVA, S.V.; KORSHAK, V.V.; KOLESNIKOV, G.S.; ZHUBANOV, B.A.

Heterochain polyesters. Part 17: Polyesters of phosphorylated dicarboxylic acids. Vysokom. soed. 1 no.3:357-361 Mr '59.

(MIRA 12:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esters)

VINOGRADOVA, S.V.; KORSHAK, V.V.

Heterochain polyesters. Part 18: Polyesters of o-xylyleneglycol.
Vysokom.sped. 1 no.5:649-655 My '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Xylenediol)

VINOGRADOVA, S.V.; KORSHAK, V.V.; v eksperimental'noy rabote prinimali
uchastiye laboranty: ARTEMOVA, V.S., MOROZOVA, D.T.

Heterochain polyesters. Part 19: Polyesters of quinite. Vysokom.
soed. 1 no.5:656-661 My '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Cyclohexanediol)

KORSHAK, V.V.; VINOGRADOVA, S.V.

Heterochain polyesters. Part 21: Mixed polyesters made from diatomic phenols. Vysokom. soed. 1 no.6:834-837 Je '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Systems (Chemistry)) (Phenols)

VINOGRADOVA, S.V.; KORSHAK, V.V.

Heterochain polyesters. Part 22: Mixed polyesters of diatomic phenols. Vysokom. soed. 1 no.6:838-841 Je '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Systems (Chemistry)) (Phenols)

VINOGRADOVA, S.V.; KORSHAK, V.V.

Heterochain polyesters. Part 23: Effect of the structure
of the polyester unit on the fusion temperature of the
polyester. Vysokom.soed. 1 no.10:1473-1481 0 '59.
(MIRA 13:3)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Esters)

KORSHAK, V.V.; VINOGRADOVA, S.V.; LEBEDEVA, A.S.

Heterochain polyesters. Part 26: Study of some laws governing
polyesterification at the interface. Vysokom.sped. 2 no.1:
61-66 Ja '60. (MIRA 13:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esterification) (Polymerization)

84503

S/190/60/002/004/003/020
B004/B056

15.8114

2109, 2209, 1526

11.2219
AUTHORS:

Korshak, V. V., Vinogradova, S. V., Artemova, V. S.

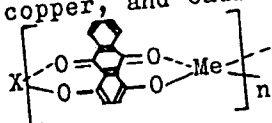
TITLE:

Investigation in the Field of the Coordination Chain
Polymers. II. On Some Polymers of Quinizarin With Metals

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 4,
pp. 492-497

TEXT: The authors aimed at producing coordination polymers of 1,4-dihydroxy-anthraquinone (quinizarin). By reaction of quinizarin with metallic acetylacetonate (or metallic acetate), at first in nitrogen current, and later in vacuum at 220°C, or by reaction in nitrogen current or dimethylformamide at 120 - 140°C the following was obtained: The coordination polymers of quinizarin with zinc, manganese, cobalt, nickel, copper, and cadmium. On the basis of the analysis, the structural formula



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1/3

Investigation in the Field of the
Coordination Chain Polymers. II. On Some
Polymers of Quinizarin With Metals

84503
S/190/60/002/004/003/020
B004/B056

MeOOCCH₃), Me CH(COCH₃)₂, or Me(OOCCH₃)₂; Y is either a quinizarin radical, an acetyl radical, or an acetylacetonate radical. The analyses and structures of the substances obtained are given in Table 1; solubility, behavior during heating, molecular weight, and crystal structure are listed in Table 2. With the exception of nickel for which a decamer was obtained, the polymerization degree was low. The substances are black powders with a very low degree of solubility and high thermal stability. As an example, the authors in Fig. 1a show the behavior of the manganese compound (decomposition in the temperature range 300 - 380°C) and in Fig. 1b that of the nickel compound (thermal stability up to 400°C). Thermal stability decreases in the following order: Ni > Zn > Mn > Cd > Cu > Co. X-ray analysis showed that the cobalt compound is an amorphous substance, whereas the compounds with manganese, nickel (X-ray picture of the decamer Fig. 2) and copper form well-developed crystals and the other compounds form badly orientated crystals. The authors thank the collaborators of the laboratories headed by G. L. Slonimskiy and A. I. Kitaygorodskiy for the thermomechanical and X-ray

Card 2/3

Investigation in the Field of the
Coordination Chain Polymers. II. On Some
Polymers of Quinizarin With Metals

84503
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B004/B056

examinations. There are 2 figures, 2 tables, and 4 references: 1 Soviet,
2 US, and 1 German.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Elemental-organic Compounds AS USSR)

SUBMITTED: December 17, 1959

Card 3/4

84504

S/190/60/002/004/004/020
B004/B056

15.8114 2109,2209, 1526
11.2219

AUTHORS:

Korshak, V. V., Vinogradova, S. V., Babchinitser, T. M.

TITLE:

Investigation in the Field of Coordination Polymers. III.
Coordination Polymers on the Basis of Bis-(8-hydroxy-
quinolyl)-methane

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 4, X
pp. 498-507

TEXT: In the present paper, the authors give a report on the synthesis of coordination polymers of bis-(8-hydroxyquinolyl)-methane (Oq) with zinc, nickel, cadmium, cobalt, manganese, and copper, as well as of mixed coordination polymers of Oq with quinizarin (Q). Oq was synthesized by reaction of o-hydroxyquinoline with formaldehyde in concentrated sulfuric acid. Polymerization was carried out with the acetylacetonate of the metal in nitrogen current, and finally in vacuum at 220°C, or in a nitrogen current or dimethylformamide at 120 - 140°C, or in dinitrile at 230°C. Table 1 gives the analyses and structural formulas, Table 2 the

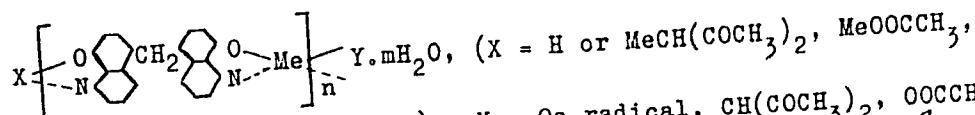
Card 1/3

84504

S/190/60/002/004/004/020
B004/B056

Investigation in the Field of Coordination
Polymers. III. Coordination Polymers on the
Basis of Bis-(8-hydroxyquinolyl)-methane

coloring, the results of the X-ray structural analysis, the molecular weight, and the behavior during heating for Oq polymers. The following structural formula is assumed:



Me CH(COCH₃)₂, Me(OOCCH₃)₂, Y = Oq radical, CH(COCH₃)₂, OOCCH₃,
CH(COCH₃)₂ or (OOCCH₃)₂. Polymeric coordination compounds were obtained.

Low-molecular compounds (trimer and dimer) were formed only with copper and nickel. Within the temperature range 250 - 320°C decomposition sets in. Fig. 1 shows the thermomechanical curve of the zinc compound of Oq. The majority of polymers have a crystal structure. Fig. 2 shows the X-ray picture of the Oq compound with zinc and cadmium. The authors further produced mixed polymers: a) with Oq and two different metals (Zn + Cu; Zn + Cd); b) with Oq + Q and Co, Mn, Cu. Analyses, coloring, structural

Card 2/4

Investigation in the Field of Coordination
Polymers. III. Coordination Polymers on the
Basis of Bis-(8-hydroxyquinolyl)-methane

⁸⁴⁵⁰⁴
S/196/60/002/004/004/020
B004/B056

formulas, and behavior during heating are given for these compounds in
Tables 3 and 4. Analysis shows that Q_q has a higher complex-forming
activity than Q. Therefore, the polymers contained more Q_q than Q.
The authors thank the collaborators of the laboratories headed by G. L.
Slonimskiy and A. I. Kitaygorodskiy for thermomechanical and X-ray
structural analyses. There are 2 figures, 4 tables, and 3 references:
2 Soviet and 1 German.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Elemental-organic Compounds AS USSR)

SUBMITTED: December 17, 1959

Card 3/4

KORSHAK, V.V.; VINOGRADOVA, S.V.; LEBEDEVA, A.S.

Heterocyclic polyesters. Part 27: Some correlations in the
polyesterification taking place at the boundary between two
phases. Vysokom.sped. 2 no.7:977-983 J1 '60. (MIRA 13'8)
(Esterification) (Polymerization)

KORSHAK, V.V.; VINOGRADOVA, S.V.; LEBEDEVA, A.S.

Heterochain polyesters. Part 28: Investigation of some correlations in interfacial polyesterification. Vysokom. soed. 2 no.8:1162-1166 Ag '60. (MIRA 13:9)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Polymerization)

VINOGRADOVA, S. V.

"Poly-arylates as possible material for fiber"

Report to be submitted for the Symposium on Synthetic Fibers,
Weimar E. Germany, 28-31 Mar 61.

Inst. Organo Elemental Compounds AS USSR

KORSHAK, V.V.; VINOGRADOVA, S.V.; FRUNZE, T.M.; GRIBOVA, I.A.;
ZHDANOV, A.A.; MOZGOTA, K.K.; KRONGAUZ, Ye.S., red.izd-va;
TIKHOMIROVA, S.G., tekhn.red.

[Chemistry and technology of synthetic macromolecular compounds.
Heterocyclic compounds]. Khimiia i tekhnologiya sinteticheskikh
vysokomolekuliarnykh soedinenii. Soderzhatsepye soedineniia:
Moskva, Izd-vo Akad.nauk SSSR. 1961. 721 p. (Itogi nauki:
Khimicheskie nauki, no.7) (MIRA 14:11)

1. Chlen-korrespondent AN SSSR (for Korshak).
(Macromolecular compounds)
(Heterocyclic compounds)

S/190/61/003/001/009/020
B119/B216

AUTHORS: Korshak, V. V., Vinogradova, S. V., Valetskiy, P. M.,
Mironov, Yu. V.

TITLE: Heterochain polyesters. XXX. A study on rules in poly-
condensation of acid chlorides of dicarboxylic acids with
dihydroxy phenols in high-boiling solvents

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 1, 1961, 66-71

TEXT: This is a continuation of the publications on the subject mentioned in the title. The present work studies the influence of solvents, temperature, reaction time, concentration of initial substances and their relative proportions, and the presence of other substances on the molecular weight of the condensation product. The acid dichloride of terephthalic acid (A) and 2,2-di(4-hydroxyphenyl)-propane (B) were used as initial substances. The polycondensation reactions were performed in special test tubes for condensation (heated in an aluminum block) or in round-bottomed flasks with mechanical stirrer (heating in silicone oil

Card 1/3

S/190/61/003/001/009/020
B119/B216

Heterochain polyesters. XXX. A study on...

bath) in a nitrogen stream. The molecular weight of the individual condensates was determined from the viscosity of a 5% solution of the condensate in cresol. The experiments were carried out at 220° and 240°C, at reaction times of 10 hr and less. The solvents used were ditolyl methane, "dioxol", tetralin, dimethyl aniline, tetrachloro ethane and pyridine. The concentrations of the initial substances (in equimolar proportions) were varied between 0.05 and 1.0 mol/l. The molar ratio of the initial substances varied from 0.5 to 2.5. The following substances were tested for catalytic activity by adding them to the reaction mixture: tetraethylammonium bromide, tetramethylammonium bromide, trimethyl-amine hydrochloride, triethyl amine, dimethyl aniline, pyridine, diethyl aniline, ammonium chloride, p-toluenesulfonic acid, ZnCl_2 , $\text{Zn}(\text{OCOCH}_3)_2$, annealed PbO and Al_2O_3 , and ZnCl_2 , MgCl_2 , CaCl_2 , TiO_2 , anhydrous AlCl_3 , TiCl_4 , metallic Na and Mg. The following reaction conditions were found to be optimum: 220°C, initial substances at a molar ratio of 1:1, a concentration in the reaction mixture of 0.6 mol/l, ditolyl methane as solvent and a reaction time of ~5 hr. Longer reaction times and higher temperatures resulted in rather lower molecular weight.

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Heterochain polyesters. XXX. A study on...

S/190/61/003/001/009/020
B119/B216

None of the additives exhibited special catalytic activity. The best results were obtained in presence of PbO , Al_2O_3 and TiO_2 . Intrinsic viscosity: 0.59, 0.46, 0.58. Yield calculated for initial substances: 82.0, 77.0, 79%. Among other publications, the authors mention a work by the first-mentioned author in collaboration with V. V. Golubev. There are 1 figure, 2 tables, and 17 references: 12 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Elemental Organic Chemistry, AS USSR).
Moskovskiy khimiko-tekhnologicheskii institut im. D. I.
Mendeleeva (Moscow Chemical-technological Institute imeni
D. I. Mendeleev)

SUBMITTED: May 30, 1960

Card 3/3

88729

158500

S/190/61/003/001/010/020
B119/B216

AUTHORS: Korshak, V. V., Vinogradova, S. V., Valetskiy, P. M.,
Salazkin, S. N.

TITLE: Heterochain polyesters. XXXI. On the chemical properties
of polyarylates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 1, 1961, 72-80

TEXT: The authors point out the scarcity of publications on the chemical properties of polyarylates. The present study was undertaken with a view to investigating the possibilities of chemical degradation of polyarylates of aromatic dicarboxylic acids, their gasoline and oil resistance, resistance to dilute and concentrated acids and bases, oxidating agents and various organic substances. Polyarylates of 2,2-di-(4-hydroxyphenyl)-propane and terephthalic acid (TD) and isophthalic acid (ID), respectively, were used for the tests. TD and ID were prepared by equilibrium polycondensation in a high-boiling solvent. For comparison, ID prepared by emulsion polymerization was also used. The following

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Heterochain polyesters. XXXI. On the chemical.. S/190/61/003/001/010/020
B119/B216

tests were carried out: To test the destructive effect of isophthalic acid, its acid chloride and 2,2-di-(4-hydroxyphenyl)-propane on ID and that of 2,2-di-(4-hydroxyphenyl)-propane on TD, the substances were added to varying amounts of the polymer in ditolyl methane and heated to 220°C for 3 hr in a stream of N₂. The destructive effect of m-cresol on TD and ID was also tested (0.5% m-cresol solution of polyacrylate was heated to 85-183°C). In further tests, TD and ID were heated for 3 hr at 100°C (or lower, if the boiling point was lower) in ethyl alcohol, methylethyl ketone, dioxane, tetrahydrofuran, n-heptane, benzene, p-xylene, N,N-dimethyl formamide, methylene chloride, chloroform, carbon tetrachloride, tetrachloro ethylene, tetrachloro ethane and chloro benzene. Gasoline and oil resistance was determined by the method described in Ref. 18. Results: TD and ID are degraded by 2,2-di-(4-hydroxyphenyl)-propane, isophthalic acid and m-cresol, but not by isophthalic acid chloride. Degradation in m-cresol proceeds according to the mechanism of alcoholysis. The authors calculated the rate constant of the pseudo-monomolecular degradation reaction. ID prepared by emulsion polymerization was affected much more severely than ID prepared by equilibrium polymerization in a high-boiling solvent. TD and ID are resistant to

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S/170/61/003/001/010/020

Heterochain polyesters. XXXI. On the chemical.. B119/B216

organic solvents, benzene and oil. It is resistant to the usual dilute and concentrated acids as well as to NaOH and F_2O_2 . Concentrated H_2SO_4 and concentrated and dilute HNO_3 cause decomposition. Mention is made of a work by the first-mentioned author in collaboration with N. I. Bekasova and V. A. Maryutina. There are 5 figures, 5 tables, and 18 references: 14 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut elementov anichestikh soedineniy AN SSSR
(Institute of Elemental Organic Compounds, AS USSR).
Moskovskiy Khimiko-Tekhnologicheskii Institut im. D. I.
Mendeleeva (Moscow Institute of Chemical Technology imeni
D. I. Mendeleev)

SUBMITTED: June 8, 1968

Card 3/3

KORSHAK, V.V.; FRUNZE, T.M.; VINOGRADOVA, S.V.; KURASHEV, V.V.; LEBEDEVA, A.S.

Heterochain polyamides. Part 29: Significance of the hydrolysis of dichlorides of dicarboxylic acids during interphase polycondensation. Vysokom.soed. 3 no.3:371-375 Mr '61. (MIRA 14:6)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Polyamides) (Condensation products (Chemistry))

KORSHAK, V.V.; VINOGRADOVA, S.V.; FRUNZE, T.M.; LEBEDEVA, A.S.; KURASHEV, V.V.

Heterochain polyesters. Part 31: Role played by the hydrolysis of aromatic dicarboxylic acid chlorides in the process of interfacial polycondensation. Vysokom.soed. 3 no. 7:984-990 J1 '61. (MIRA 14:6)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Hydrolysis) (Isophthaloyl chloride)
(Terephthaloyl chloride) (Polymerization)

5.3830

25276

S/190/61/003/007/020/021
B101/B230

AUTHORS: Korshak, V. V., Vinogradova, S. V., Lebedeva, A. S.
TITLE: New method of synthesizing grafted and block copolymers
PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 7, 1961, 1117

TEXT: In this letter authors report to the editor that they found a possibility of applying the method of interfacial polycondensation to the synthesis of grafted and block copolymers. Synthesis of grafted and block copolymers may be conducted in various alternatives of this method. Thus, copolymers may be obtained on the basis of the reactions: (see below). In particular, authors obtained grafted copolymers on the basis of phenol formaldehyde resin and polyarylates from dian and isophthalic or sebacic acids. The grafted copolymer obtained on the basis of phenol formaldehyde resin, chloride of isophthalic acid and dian at a molar ratio of 0.2 : 1.1 : 1 (as well as 2.2 moles of alkali) was a crystalline substance of a low degree of orderliness, with softening point 170 - 292°C. capable to form a solid film out of the molten material. Tensile strength of the non-oriented film of this polymer amounted to 660 kg/cm².

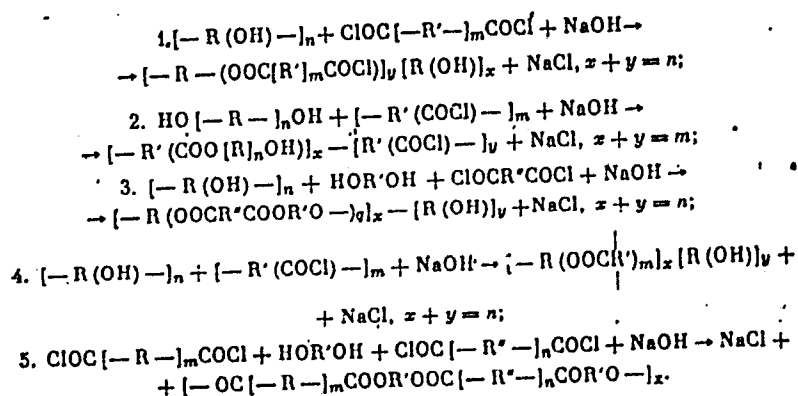
Card 1/2

New method of synthesizing....

S/190/61/003/007/020/021.
B101/B230

with a relative breaking elongation of 12 %. Properties of grafted copolymers obtained by interfacial polycondensation may be varied within a wide range by changing the ratio and chemical character of the initial substances. [Abstracter's note: Complete translation.]

SUBMITTED: January 3, 1961



Card 2/2

18180

S/190/61/003/010/009/019
B124/B110

15.8150 1555 2209, 2409

AUTHORS: Korshak, V. V., Vinogradova, S. V., Morozova, D. T.

TITLE: Study of coordination polymers. VII. Coordination polymers based on quinizarin and 4,4'-bis-(acetoacetyl) diphenyl ether

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961.
1500 - 1508

TEXT: The authors synthesized the homogeneous coordination polymers of quinizarin (I) with Mg, Ca, and Be, the coordination polymers of (I) with two different metals and, finally, the coordination polymers on the basis of (I) and 4,4'-bis-(acetoacetyl)biphenyl ether (II) with Zn, Cu, Mn, Ni, Co, Mg, Ca, Cd, and Be, and studied their properties. The results obtained with homogeneous coordination polymers and mixed coordination copolymers are given in Tables 1 - 4. The studied polymers were homogeneous, solid, powder-like substances of intense color, practically insoluble in chloroform, dichloro ethane, tetrachloro ethane, a mixture of tetrachloro ethane and phenol, chloro benzene, methanol, dimethyl formamide, ditolyl methane, dioxane, tetrahydrofuran, methyl-ethyl ketone, ethyl acetate, and cresol

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28180

S/190/61/003/010/009/019

B124/B110

Study of coordination...

except for the coordination polymers of beryllium, which were rather easily soluble in chloroform, cresol, and dimethyl formamide. The molecular weights of polymers of I with Be varied from 1700 - 1800 and from 3500 - 3600. As proved thermomechanically mixed coordination polymers of I with Zn and Cd or Zn and Cu are more stable than the respective homopolymers. This is reverse with Be polymers. Heat deformation of all compounds was found between 200 - 450°C (no chemical decomposition). As proved by X-ray tests most of them consist of crystalline and amorphous phases together. The synthesis was carried out by heating the ligands solved in dimethyl formamide in N₂ current at 120°C, addition of the metal compound solved in dimethyl formamide at 100°C, and 1 hr heating at 120°C, 1 hr at 120 - 140°C, 4 hr at 140°C. The authors thank the collaborators of the laboratories of INEOS AN SSSR under supervision of G. L. Slonimskiy, A. I. Kitaygorodskiy, and N. E. Gel'man. Ye. S. Krongauz and V. Ye. Sheina (Ref. 3; Vysokomolek. soyed. 2, 662, 1960) are mentioned. There are 4 figures, 4 tables, and 5 Soviet references.

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ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Elemental Organic Compounds AS USSR)

Card 2/9

15.8340

29733
S/190/61/003/011/002/016
B124/B101

AUTHORS:

Korshak, V. V., Slinkin, A. A., Vinogradova, S. V.,
Babchinitser, T. M.

TITLE:

Study in the field of coordination chain polymers.
VIII. Coordination polymers based on bis-(8-hydroxy-
quinolyl)methane, quinizarin, and 4,4'-bis-(aceto-
acetyl)phenyl ether

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961,
1624-1632

TEXT: The synthesis of mixed coordination polymers of bis-(8-hydroxy-
quinolyl)methane (I) and quinizarin (II), (I) and 4,4'-bis-(aceto-
acetyl)phenyl ether (III) with various metals is described, and the
magnetic properties of some coordination polymers of (II), (I), and (III)
are studied. Compositions, structures, and properties of the synthesized
coordination polymers are given. X-ray data indicate that the
homogeneous coordination polymers exhibit a more or less ordered
structure. The solubilities of the homogeneous and the mixed coordination

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Study in the field of...

29733
S/190/61/003/011/002/016
B124/B101

polymers in organic solvents are extremely low; only the mixed coordination polymers of (I) and (III) with Cu are soluble in cresol. The temperature dependence of the magnetic susceptibility (χ) as well as the magnetic moment and the Weiss constant calculated from the magnetic susceptibility are given for a number of coordination polymers on the basis of (II), (I), and (III). Conclusions as to the configurations of Co, Mn, and Ni in the polymers were drawn from the magnetic properties. The authors thank the staff of the Laboratories of INOES AN SSSR under the guidance of A. I. Kitaygorodskiy and N. E. Gel'man. There are 3 figures, 3 tables, and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows:
D. P. Craig, A. Maccoll, R. S. Nyholm, L. E. Orgel, L. E. Sutton, J. Chem. Soc. 1954, 332, 354.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR
(Institute of Elemental Organic Compounds, AS USSR).
Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskoy, AS USSR)

SUBMITTED: November 16, 1960

Card 2/2

KORSHAK, V.V.; VINOGRADOVA, S.V.

Polyarylates. Usp. khim. 30 no. 4:421-461 Ap '61. (MIRA 14:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Esters) (Polymers)

24354

S/026/61/000/008/004/004
D051/D113

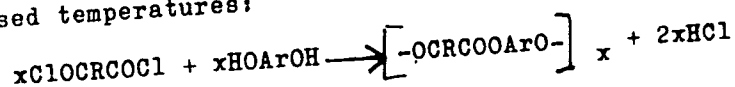
15 8150

AUTHOR: Vinogradova, S.V., Doctor of Chemical Sciences

TITLE: Polyarylates

PERIODICAL: Priroda, ⁵⁰no. 8, 1961, 91-93

TEXT: A survey on the derivation, properties, and use of polyarylates, i.e. esters of a heterogeneous chain, is given. In the USSR, a type of polyarylate derived from aromatic dicarboxylic acids is being successfully developed at the Institut elementoorganicheskikh soedineniy AN SSSR (Institute of Elemental Organic Compounds of the AS USSR) in the laboratory of high-molecular compounds. Corresponding member of the AS USSR V.V. Korshak is in charge of this laboratory. The best method of producing polyarylates is by deriving them from reactions of bivalent phenols with dicarboxylic acid chlorides. This can be achieved by polycondensation in the melt or in solution at increased temperatures:



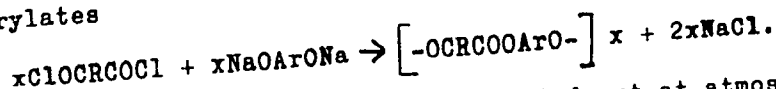
and by interphase polycondensation:

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D051/D113

Polyarylates



In the second case, the reaction is carried out at atmospheric pressure and mostly at room temperatures and in very short stretches of time (minutes). This method is preferable, because it allows thermally unstable raw materials to be used and polyarylates of a considerably higher molecular weight to be synthesized. In addition to the general resistivity of polyarylates towards chemical agents such as mineral and organic acids, alcohols, fats, etc., the polyarylates of the described type are also resistant to heat and ultraviolet and ionizing radiation. Most polyarylates do not have a fixed softening temperature. On comparing the structure and softening temperature of various polyarylates, the author points out that polyarylates from dicarboxylic acids and diols, which have the functional groups in the para position, have a higher softening temperature than polyarylates from starting components with the functional groups in the meta position at the aromatic nucleus. An analogous structural dependence could be established for the mechanical properties of polyarylates. Some of these polyarylates also have good dielectric constants and are preferable to lavsan and ftoroplast-3. Up to the present time, the only polyarylate to have found practical application is one which is derived from carbonic acid and dian and is known as leksan and makrolon.

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D051/D113

Polyarylates

It can be processed by pressure molding, extrusion, etc., and is widely used as a building material. Its use for the production of organic glass is promising. The author concludes that the practical application of polyarylates derived from other dicarboxylic acids will only be achieved after further research. There is 1 table.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Moskva)
(Institute of Elemental Organic Compounds of the AS USSR)
(Moscow)

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X

15.8152

11.2219

25339
S/020/61/138/006/015/019
B103/B215

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, and
Vinogradova, S. V.

TITLE: Some laws of the polycoordination reaction

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 6, 1961, 1353-1356

TEXT: The authors determined the conditions for the synthesis of coordination polymers with a molecular weight of more than 100,000. The tetra-ketone 4,4'-bis-(acetoacetyl)-phenyl ether (BAPE) was used as initial ligand, since solubility of the final product is of great advantage for the examination. The authors allowed BAPE to react with beryllium- and zinc acetoacetates and also with zinc acetate. Polycoordination in some respects reminds of polycondensation. In both cases, the polymer is synthesized due to the interaction between two types of reactive groups where, besides the growth of polymer chains, low-molecular products are separated: in the former case water, alcohol, etc., in the latter case acetylacetone, acetic acid, etc. The authors had already found polycondensation to be a balanced process. If the low-molecular product is

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S/020/51/132/006/015/019
B103/B215

Some laws of the polycoordination reaction

removed from the reaction sphere, the equilibrium may shift and thus increase the polymer yield by favoring the formation of polymer molecules. The authors found that polycoordination like polycondensation is a reversible process, and that coordination polymers are completely destroyed by the low-molecular reaction product. They also proved that coordination polymers react with chemically similar substances. The low-molecular product should therefore be completely removed from the reaction sphere. The reaction was conducted (a) in a solution, (b) in a melt. Ad (a): BAPE and zinc acetate dissolved in dimethyl formamide were subjected to polycoordination in nitrogen flow at 120 and 140°C. In both cases, the polymer yield was 84-87 % after 5 hr. The intrinsic viscosity of the polymer in cresolic solution was 0.06-0.09 and remained constant during a reaction time of 0.5-11 hr. In their attempts to increase the viscosity by higher reaction temperatures (dissolution in dinitr at 220°C for 5 hr), the authors obtained a polymer poorly soluble in cresol. Therefore they continued their experiments with beryllium polymers (instead of zinc) in dinitr at 200-240°C. Thus, they found that polymers of higher viscosity are formed in solutions of higher concentration (0.74 to 2.00 mole/l). Distillation of acetylacetone also favors the increase in

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S/020/61/138/006/015/019

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Some laws of the polycoordination reaction

molecular weight. The quantitative ratio of the initial products also has a great effect upon viscosity. A polymer of the highest molecular weight forms at an equimolar ratio of the two components. A 0.2 mole excess of one component reduces the viscosity almost to 1/4. If the excess is higher, viscosity is no longer affected. Ad (b): In the melt, BAPE and beryllium form a polymer with a viscosity of 0.06 already within the first hour at 200°C. It remains constant during 5 hr of reaction. At 260°C, viscosity is doubled and increases at this temperature as the time of reaction increases. In vacuo (1-2 mm Hg), the maximum increase in viscosity is reached in the second stage of reaction. Thus, the authors obtained a viscosity of 0.44 of the coordination polymers by conducting the reaction first in nitrogen flow for 5 hr at 200°C, then in vacuo for another 5 hr at 260°C. When using 6 g of BAPE instead of 0.5 g, a viscosity of 0.48 was obtained in vacuo at a reaction time of 14 hr and 260°C. The fractionation of this polymer from chloroform with n-hexane yielded three fractions: (I) 27.3 % (molecular weight: 12600), (II) 28.2 %, and (III) 44.5 %, with a viscosity in chloroform of 1.2, 0.5, and 0.32, respectively. The authors explain the increase of the molecular weight by the above equilibrium character of the process. The removal of

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Some laws of the polycoordination reaction

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B103/B215

the low-molecular reaction product (acetylacetone) is promoted by higher temperatures and by a vacuum. Thus, the coordination polymer is protected from chemical destruction, and the equilibrium is shifted toward the formation of the polymer molecule. A joint paper by V. V. Korshak and Ye. S. Krongauz (Vysokomolek. soyed., 1, 1764, 1959) is mentioned. There are 3 tables and 4 Soviet-bloc references.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: March 9, 1961

Card 4/4

32358
S/191/62/000/001/002/006
B145/B110

15.8112

AUTHORS:

Kerzhak, V. V., Akutin, M. S., Vinogradova, S. V.,
Rodivilova, L. A., Valetskiy, P. M., Lebedeva, A. S.,
Salazkin, S. N.

TITLE:

Polyarylates - new thermostable polymers

PERIODICAL:

Plasticheskiye massy, no. 1, 1962, 9-13

TEXT: A survey of the properties of polyarylates is given. They are best synthesized from bifunctional phenols and dicarboxylic acid chlorides. Some of the synthesized polyarylates and their softening temperatures are given in Table 1. The great number of rings in the polymer ensure high resistance to most organic solvents as well as to gasolines and oils. At room temperature, the polyarylate ИА (ID) is stable against H₂O₂, dilute and concentrated caustic soda solutions, acetic acid, formic acid, nitric acid, and sulfuric acid. The effect of dilute and concentrated ammonia solutions considerably reduces the molecular weight of ID. Polyarylates on the basis of phenolphthalein are readily soluble in a number of solvents, which facilitates the production of foils. At the NIIPM it was

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B145/B110

Polyarylates - new thermostable ...

established that the polyarylates T_A(TD) and ID withstand high temperatures. Decomposition increases with rising temperature, at first slowly and then sharply at about 400°C. The oxidation of ID sets in at 250°C and proceeds slowly. Measurement of breakdown voltage, temperature dependence of tan δ, dielectric constant, and volume resistivity for some polyarylates prove that they are better dielectrics than polyethylene terephthalate, polycarbonate, etc. Polyarylates have good mechanical properties at various temperatures. Working processes are being elaborated at present. Specimens of mixed polyarylates were obtained by pressure casting, the tensile strength of which reached 850 kp/cm². Specimens sprayed on metal showed an adhesion to metal of 75 to 150 kp/cm². Work is also in progress on polyarylates with double bonds and free functional groups. They might be used as a basic material for the production of varnishes, glues, glass-reinforced plastics, and foam plastics. There are 5 figures, 6 tables, and 5 Soviet references. X

Table 1. Softening temperature of polyarylates of different structures.
Legend: (1) polyarylate; (2) structure of the chain link; (3) softening temperature in °C; (4) TD; (5) ID; (6) TG; (7) IG; (8) TR; (9) IR; (10) TF; (11) IF; (12)-(14) ITD; (15) IDR; (16) TDR; (17) IFD; (18) IAD; * the
Card 2/5 3

Polyarylates - new thermostable ...

32358

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B145/B110

molecular ratio of the initial dicarboxylic acid chlorides related to 1 mole of diol is given in parentheses; * * the molecular ratio of the initial diols related to 1 mole of dicarboxylic acid chloride is given in parentheses.

Card 3/53

X

S/062/62/000/008/009/016
B101/B160

AUTHORS: Korshak, V. V., Vinogradova, S. V., Salazkin, S. N., and Sidorov, T. A.

TITLE: Production of polyaryls based on phenol phthalein by interphase polycondensation

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 8, 1962, 1416-1423

TEXT: This is the 47th report on heterochain polyesters. Interphase polycondensation of phenol phthalein (P) with chlorides of dicarboxylic acids yielded polymers of low intrinsic viscosity, $[\eta]$. Reacting P with isophthalic acid in this way in p-xylol solution, at initial reactant concentrations of 0.1 mole/l, with 2M NaOH per M phenol phthalein, resulted in $[\eta] \leq 0.23$ (in tricresol) and yields of up to 80%. Higher alkaline concentrations reduced both $[\eta]$ and yield. Nor did an emulsifier (Nekal) or catalyst (triethylbenzyl ammoniumchloride) cause an appreciable increase in $[\eta]$. Polycondensates from P and terephthalic acid (T), and mixed polycondensates from P, 4.4'-dihydroxydiphenylpropane

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S/062/62/000/008/009/016
B101/B180

Production of polyaryls based ...

(Dian) and I or T all had a low $[\eta]$ (0.26-0.32). $[\eta]$ was lower still (0.12-0.16) when the dichlorides of I and T were totally or partially replaced by fumaryl dichloride, due to the slight hydrolysis caused by the latter. These results are attributed to the slow rate of the tautomeric transformation of P. In alkaline solution it is assumed that there is equilibrium between the quinoid and the lactone forms. The chloride of the dicarboxylic acid only reacts with the lactone. Since transition from quinoid to lactone occurs slowly, hydrolysis of the acid chloride sets in, and the molecular weight remains low. This is supported by the absence of a band characterizing the quinoid structure at 1680 cm^{-1} in the IR spectra of the polycondensates. The 1300 cm^{-1} band, attributed by S. Lo Elisabeth to the quinoid form (Industr. and Engng. Chem., 52, 319 (1960)), was ascribed to the residue of I, since it was also observed in the polycondensate of Dian and I. The doublet $1710\text{-}1760\text{ cm}^{-1}$ is attributed to the different bonds of the carbonyl groups (ester and lactone bonds). There are 2 figures and 4 tables.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

Card 2/3

Production of polyaryls based ...

S/062/62/000/008/009/016
B101/B180

SUBMITTED: February 17, 1962

Card 3/3